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REPORT

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SUBJECT Oil Shale Distillation Plants at Kohtla - Jarve
and Kivioli

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1. The oil-shale low-temperature-distillation plants at Kivioli and Kohtla-Järve supply fuel to the Soviet naval bases at Leningrad and Murmansk.
2. Both plants, which were originally of equal capacity, were built by the firm of Julius Pintsch in 1925. Following the Soviet withdrawal from Estonia in 1941, the same firm was called in to extend and modernize both plants, as well as three smaller plants at Slantsy, Ereka, and Sillama.
3. From 1944 to 1946, after the reoccupation of the area by the Soviet Army, Kivioli was again extended and is now by far the larger plant. As a result of its greatly increased capacity, the plant now draws additional supplies of oil shale from Ereka and Slantsy, and it has been found possible to close down the smaller plants at Ereka, Slantsy, and Sillama, although open-cast working continues at Slantsy and Sillama.
4. The area between the Baltic and Lake Peipus contains oil-shale deposits estimated at six billion tons. Layers, two to three meters in thickness, are normally found at depths of 15 to 20 meters and are worked by open-cast methods. The average proportion of volatile constituents is between 15 and 20 percent.

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Kivoli

5. Three methods of distillation are used:
- a. tunnel furnace
 - b. gas generator
 - c. subterranean distillation

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6. The average daily capacity of the tunnel-furnace plant is 700 tons of oil shale and of the gas-generator plant, which has eight generators, 600 tons. In the tunnel furnace the oil shale is distilled at 430° C by a circulatory low-temperature process. The gases from the tunnel-furnace and gas-generator plants go through almost identical but separate processes, the volatile constituents of the generator gas which cannot be condensed being collected in the gas container of the generator plant and used to heat the tunnel furnace. Both plants are now undergoing considerable extensions; and, when these have been completed at the end of the year, the combined output of both plants is expected to reach 600 tons per day, of which 450 to 500 tons will consist of volatile constituents, including fuel oil, gasoline, etc. 50X1-HUM
7. In addition, approximately 2,000 cubic meters of oil shale per day are treated by subterranean distillation. The average daily yield by this method is 200 to 230 tons, which, after the extraction of 25 percent crude bitumen, leaves 165 to 175 tons of volatile constituents.
8. The two methods of subterranean distillation employed at Kivioli are as follows:
- a. In the case of shale lying close to the surface, i.e., at floor depths of up to 10 meters, boring is carried out from the surface. A pipe system is constructed above the layer and inserted in prepared bore holes. The shale is then heated to a temperature of 800° C. By controlling the low-temperature-distillation gases it is possible to influence the direction and intensity of the distillation process.
- b. In the second method the shale to be processed is blasted in blocks of 100 cubic meters and then sealed off by containing walls, constructed specially for this purpose. The necessary tubing is then inserted and the blocks heated as above.
9. A power station has recently been completed at Kivioli, which more than covers the peak requirements of the plant. It is therefore no longer necessary to obtain current from the Kohtla power station, which is now available solely for supplying the requirements of the Kohtla-Jarve plant. 50X1-HUM
10. The new power station, which is immediately next to the boiler-house, consists of two condensing turbines, one from Siemens-Schuckert, and the other of USSR manufacture, each of which has an output of approximately 2750 kw. 50X1-HUM
- Kohtla-Jarve
11. The Kohtla-Jarve plant, which is considerably smaller than that at Kivioli, uses only the gas-generator system. There are at the moment twelve generators in use.
12. Daily capacity is 900 tons of oil shale. After abstraction of bitumen, the average daily output of volatile constituents is 250 tons. 50X1-HUM

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